

Notice of Allowability

Application No.

09/863,405

Applicant(s)

VAN DOAN ET AL.

Examiner

Jin-Cheng Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/20/2007.
2. ☒ The allowed claim(s) is/are 1-10,20-25,31,33-37,40,42-50,65-72,78,97-107,114 and 116.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Prior to this Office Action, the Examiner has an interview with Mr. Scott D. Malpede dated July 5, 2007. Applicant agrees with the changes suggested by the Examiner to the claims 31, 78 and 116.

31. (Currently Amended) A computer-readable storage medium storing [encoded with] computer-executable instructions causing a computer to perform a method of creating an image, the image being formed by rendering a plurality of graphical objects to be composited according to an expression tree representing a compositing expression for the image, the expression tree including a plurality of nodes each representing an object of the image or an operation for combining sub-expressions of the compositing expression, said computer-readable storage medium comprising: [said method comprising the steps of:]

means for determining an opacity region representation for each leaf node of the nodes of the expression tree, the opacity region representation comprising one or more of three predetermined values, each predetermined value distinctly identifying whether a corresponding region of an object represented by the leaf node is an opaque region, a transparent region or a partially transparent region such that the opacity region representation simultaneously represents each opaque region, transparent region and partially transparent region of the object represented

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by the leaf node, wherein a union of each opacity region representation for the expression tree includes at least one of each of the three predetermined values;

means for determining an obscurance region representation for at least one leaf node based on an analysis of the opacity region representation associated with the at least one leaf node, such that, for the image, the at least one leaf node simultaneously comprises both the opacity region representation and the obscurance region representation, with the obscurance region representation being separate from the opacity region representation of the at least one leaf node, the obscurance region representation being assigned one or more of a plurality of further predetermined values, each further predetermined value of said obscurance region representation distinctly identifying whether a corresponding region of the object represented by the at least one leaf node is hidden by another object or is visible in the image;

means for partitioning the object into a plurality of regions;

means for overlaying the obscurance region representation on the partitioned object such that the partitioned object is substantially encompassed within the obscurance region representation;

means for traversing the overlayed obscurance region representation to identify any of the plurality of regions of the partitioned object which include at least a portion of the visible region;

means for rendering the identified regions of the object that are visible in the image, based on the traversal of the overlayed obscurance region representation to create the image, wherein the opacity region representation and the obscurance region representation are associated with the same leaf node; and

means for outputting the formed image to an image output device.

78. (Currently Amended) A computer-readable storage medium storing [encoded with] computer-executable instructions causing a computer to perform a method of creating an image, the image being formed by rendering at least a plurality of graphical objects to be composited according to an expression tree, the expression tree representing a compositing expression for the image and comprising a plurality of nodes, each node of the expression tree representing an object of the image or an operation for combining sub-expressions of the compositing expression, said computer-readable storage medium comprising: [said method comprising the steps of:]

means for determining an opacity region representation for each leaf node of the nodes of the expression tree, the opacity region representation comprising one or more of three predetermined values, each predetermined value distinctly identifying whether a corresponding region of an object represented by the leaf node is an opaque region, a transparent region or a partially transparent region such that the opacity region representation simultaneously represents each opaque region, transparent region and partially transparent region of the object represented by the leaf node;

means for determining an obscurance region representation for at least one leaf node of the expression tree based on an analysis of the opacity region representation associated with the at least one leaf node, such that, for the image, the at least one leaf node simultaneously comprises both the opacity region representation and the obscurance region representation, with the obscurance region representation being separate from the opacity region representation of the

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at least one leaf node, the obscurance region representation being assigned one or more of a plurality of further predetermined values, each further predetermined value of the obscurance region representation distinctly identifying whether a corresponding region of the object represented by the node is hidden by another object or is visible in the image;

means for rendering the regions of the object that are visible in the image, based on a traversal of the obscurance region representation, to create the image, wherein the opacity region representation and the obscurance region representation are associated with the same leaf node; and

means for outputting the formed image to an image output device.

116. (Currently Amended) A computer-readable storage medium storing [encoded with] computer-executable instructions causing a computer to perform a method of creating an image, the image being formed by rendering at least a plurality of graphical objects to be composited according to an expression tree, the expression tree representing a compositing expression for the image and comprising a plurality of nodes, each node of the expression tree representing an object of the image or an operation for combining sub-expressions of the compositing expression, said computer-readable storage medium comprising: [said method comprising the steps of:]

means for performing a first traversal of the expression tree to determine an opacity region representation for each leaf node of the nodes of the expression tree, the opacity region representation comprising one or more of three predetermined values, each predetermined value distinctly identifying whether a corresponding region of an object represented by the leaf node is

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an opaque region, a transparent region or a partially transparent region such that the opacity region representation simultaneously represents each opaque region, transparent region and partially transparent region of the object represented by the leaf node;

identifying leaf nodes of the expression tree for which compositing information is required, depending on the opacity region representation associated with each leaf node;

means for performing a second traversal of the expression tree to determine compositing region representations for each identified leaf node, such that, for the image, the leaf node simultaneously comprises both the opacity region representation and the compositing region representation, wherein the compositing region representation for each leaf node is separate from the opacity region representation for each leaf node and is determined using the opacity region representation determined for each leaf node, and wherein the compositing region representation indicates at least regions of an object represented by the node that are hidden by another object, load regions and visible regions;

means for rendering the regions of the object that are visible in the image, based on a traversal of the compositing region representation, to create the image, wherein the opacity region representation and the compositing region representation are associated with the same leaf node; and

means for outputting the formed image to an image output device.

Allowable Subject Matter

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The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-10, 20-25, 31, 33-37, 40, 42-50, 65-72, 78, 97-107, 114 and 116:

The prior art of record fails to teach or suggest the opacity region representation and the obscurrence region representation are associated with the same leaf node.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665.

The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw

Jinsheng Wang